

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION **SEMESTER I SESSION 2022/2023**

**COURSE NAME** 

: JIGS AND FIXTURE DESIGN

COURSE CODE

: BDX 20102

PROGRAMME CODE

: BDX

**EXAMINATION DATE** 

: FEBRUARY 2023

**DURATION** 

: 2 HOURS

INSTRUCTION

: 1. ANSWER ALL QUESTIONS.

2. THIS FINAL **EXAMINATION** CONDUCTED VIA CLOSED BOOK.

3. STUDENTS ARE PROHIBITED TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA

**CLOSED BOOK** 

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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Q1 (a) List down EIGHT(8) aircraft tool's design objectives.

(8 marks)

(b) To get an accurate locating pin for a part in a fixture, movements must be restricted. By referring to Figure Q1(b), sketch and explain the principle of restricting movement to design a fixture

(12 marks)

Q2 (a) Describe FOUR(4) basic functions of clamps.

(8 marks)

(b) Custom solutions of clamp design for jigs or fixtures may also be necessary for specific uses that fall outside the norms of the machining process. With the aid of diagram, sketch and describe any THREE (3) types of clamps.

(12 marks)

Q3 (a) Milling fixtures are typically mounted on the nose of the machine spindle or a faceplate, and the workpieces hold them. The table is shifted and set in the proper position about the cutter. The workpieces are located in the base of the fixture and clamped before starting the operation. Design a milling fixture specifically for an aircraft component in Figure Q3(a), by providing a diagram, part drawing, production plan, locating of part and dimensions.

(14 marks)

(b) Gauging and measuring are some of the process conducted during inspection of an aircraft component. As the inspection engineer, compare the gauging and measuring fixtures by providing the diagram and the inspection process method.

(6 marks)

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Q4 (a) Discriminate the use of a conventional fixture over a modular fixture.

(12 marks)

(b) Make a comparison between computer aided fixture design and the conventional way to design a fixture.

(8 marks)

Q5 (a) Justify a design consideration of fixture for welding operations by elaborating the objectives of design, locating and holding of the welding work piece, the type of material and the fool proofing element needed to perform the welding.

(10 marks)

(b) Appraise the use of modular fixture to weld an aircraft component, over a conventional fixture.

(10 marks)

-END OF QUESTION -

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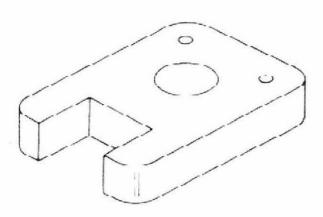


Figure Q1(b)

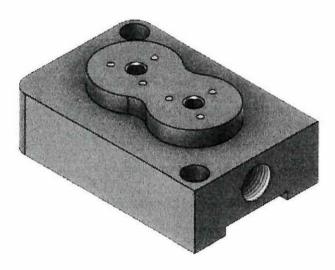


Figure Q3(a)

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